



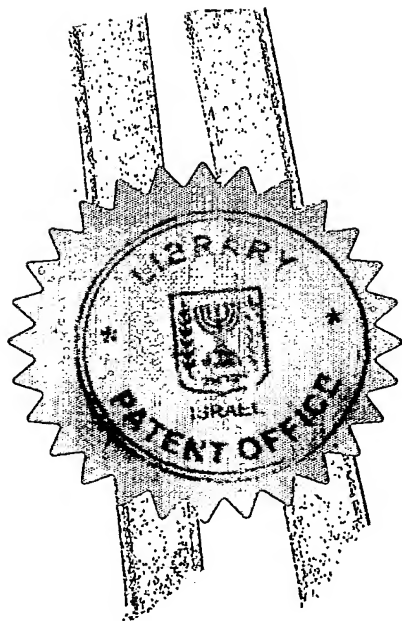
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**בקשה לפטנט**  
Application For Patent

מספר: Number	159776
תאריך: Date	08-01-2004
הוקדם/נה: Ante/Post-dated	

אני, (שם המבקש, מענו ולגבי גוף מאוגד - מקום התאגדותו)  
I, (Name and address of applicant, and in case of body corporate-place of incorporation)

טכנולוגיות אינק ג'ט תעשייתיות (2003) בע"מ, חברה ישראלית מרח' הרכבת 27, ירושלים 93502, ישראל  
Industrial Ink Jet Technology (2003) Ltd., Israel Company of 27 Harakevet Street, Jerusalem 93502, ISRAEL

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כרטיסי ברכה מאירים מבוססים על דיודות אורגניות פולטות אור

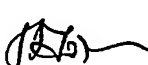
(בעברית)  
(Hebrew)

(באנגלית)  
(English)

**Illuminated decorative greeting cards using organic light emitting diodes**

Hereby apply for a patent to be granted to me in respect thereof.

מבקש בזאת כי ינתן לי עליה פטנט

* בקשת חלוקה Application of Division		* בקשת פטנט מוסף Appl. for Patent of Addition		דרישת דין קדימה Priority Claim	
מבקשת פטנט from application		* לבקשה/לפטנט to Patent/Appl.		מספר/סימן Number/Mark	מדינת האיגוד Convention Country
No. _____	מס' _____	No. _____	מס' _____	תאריך Date	
Dated _____	מיום _____	Dated _____	מיום _____		
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filed in our file 151332-4		חוגש בתיקנו 151332-4			
C. 151334.0		המען למסירת מסמכים בישראל Address for Service in Israel			
REINHOLD COHN AND PARTNERS Patent Attorneys P.O.B. 4060, Tel-Aviv		ריינהולד כהן ושותפיו עורכי פטנטים ת"ד 4060, תל-אביב			
חתימת המבקש Signature of Applicant		בשם המבקשים, ריינהולד כהן ושותפיו		שנת 2004 Year	בחדש 8 of January
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**כרטיסי ברכה מאירים מבוססים על דיודות אורגניות פולטות אור**

**Illuminated decorative greeting cards using organic light emitting diodes**

**Industrial Ink Jet Technology (2003) Ltd.**

**טכנולוגיות אינק ג'ט תעשייתיות (2003) בע"מ**

**C. 151334.0**

## FIELD OF THE INVENTION

This invention relates to Organic Light Emitting Diodes (OLED) and to decorative greeting cards.

## BACKGROUND OF THE INVENTION

A recent development in the field of illumination generating devices are lightning panels based on the Organic Light Emitting Diode (OLED). OLED panels are based on organic materials that emit light when electric currents excite it. For the present application, it is sufficient to mention also that OLED panels which contain organic materials are either:

(1) made of conjugated polymers and can be manufactured by ejecting a solution of the polymer through tiny nozzles such as available in ink jet mechanisms and are refereed to as PLED, or

(2) made of small organic molecules and are produced by vacuum deposition and/or sputtering and are referred to as SOLED

The thickness of such devices can be even sub milli metric most of which is taken by a transparent substrate , and if plastic material is selected for the base, this type of flat panel display can be folded or made to conform to curved surfaces.

Most of the currently available PLED flat panel displays are structured to have multiplicity of addressable picture elements so that the display is changeable along the temporal dimension, up to the level where superb video images can be displayed. In order that a changing image can be displayed dynamically, multiple addressing electrodes or transistors must be provided in order illuminate selected pixels. The dynamically changing illumination is used in computer and Video displays.

However, there are situations where a fixed unchanging, lighted image is required to be displayed, for example as an illuminated decoration such as illuminated greeting cards. In such case, the provision of address lines and their associated circuitry is redundant and unnecessarily complex and expensive.

U.S. Patent Application No. 60/525,179 entitled "Method and system for patterning an organic light emitting diode display by printing" by the same inventors of the present application describes OLED display panels

which are based on light emitting polymers having a relatively simple multilayer structure which can be both very thin and flexible.

Currently many decorative greeting cards are printed on thick paper sometime embossed by shiny foil or radiant colors, as it is desired that they will be very attractive and draw attention. Some companies such as Lumax of the netherlands print their greeting cards on semi transparent paper and supply them with tea-light candle or bulb lamp holder. The card is mounted in the holder and back lighted. These cards are produced by conventional printing techniques.

#### SUMMARY OF THE INVENTION

It is an object of the invention to use OLEDs for the display of fixed images that will function as "self" illuminated greeting cards.

It is another object of the invention to print these OLED based illuminated greeting cards in processes identical or similar to conventional printing on paper.

It is another object of the invention to create these OLED based illuminated cards not only as flat cards but also as cards with curvatures, so that in this case they can be left standing up on flat horizontal surfaces.

It is another object of the invention to enable the functionality of the device of the invention by activating it only on command.

The invention proposes also means to supply the device of the invention with sufficient power to enable its function over significant part of the life of the OLED device.

The invention proposes by reference to US patent application 60/525,179 by the same inventors of the current application a way of patterning the OLED display that eliminates addressing by row and columns or the individual addressing of pixels and requires very few electrodes, even as few as two.

In reference to the same patent application the invention propose that the patterns can be printed in multi color process as rasterized image using ink jet or offset printing techniques.

## DETAILED DESCRIPTION OF THE INVENTION

Essentially, the invention is based the use of PLEDs for the display of fixed images permitting a very simple addressing scheme in comparison to conventional pixelized prints. This can be executed by ink jet type print head. However, the invention is extended to SOLED where the use of masks analog to plates used in offset printing.

The fixed image of the display, prepared according to US patent application 60/525,179 by the same inventors of the present application, is executed on thin transparent film that acts as the substrate. The thickness of such substrate can be as that of paper stock. However for practical purposes and appearance it is desired to use thickness of 200 gm paper stock or greater. The thickness of all other layers of the OLED is sub milli metric. Alternatively the OLED can be printed on thinner substrate which in turn is mounted on heavy stock paper.

The results is an OLED imaged pattern mounted in "card" which can be mailed in an envelope. As long as the OLED is not powered only a flat dull colored non discernible image can be seen. When powered up the image appears clearly as an illuminated pattern having luminance intensity close to that of a CRT or LCD screen with vivid colors and high contrast . The OLED device can be made so that it will be automatically powered when taken out of the envelope by the person who received it. In such cases it is necessary to include a power source [ a thin battery or paper battery ] with the device.

The "instant" powering of the device can be done in several manners only one of which is described here as an example. The card is of thick paper stock which have two parts, one of which is mounted with the OLED. The other part is mounted with a flat battery, and the two parts are folded on each other. The battery has two wires, one which is connected to the anode and the other to the cathode of the OLED. Only one of these connectors is permanently connected to the battery. The other wire is isolated, except for its tip which is formed in T shape. The battery has a wire terminated in a loop. The T terminated wire is passing through the loop but does no form a contact when the card is folded. When the card is opened the wire with the T tip is stretched and it is drawn against the loop forming a contact. when folded again [ so as to cover the OLED ], the wire is getting out of the loop and the contact is lost. In this way the OLED is illuminated only when the folded card is open.

## DESCRIPTIONS OF THE DRAWINGS

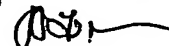
Figure 1 is schematic drawing of the device of the invention in the situation when the card is open. It shows the OLED and its connections to the battery. The wire with the T shaped tip is stretched and the T tip is pressed against the loop of the wire that comes from the battery, thus forming electrical contact. the other wire is permanently connected to the battery. Therefore the OLED is illuminated

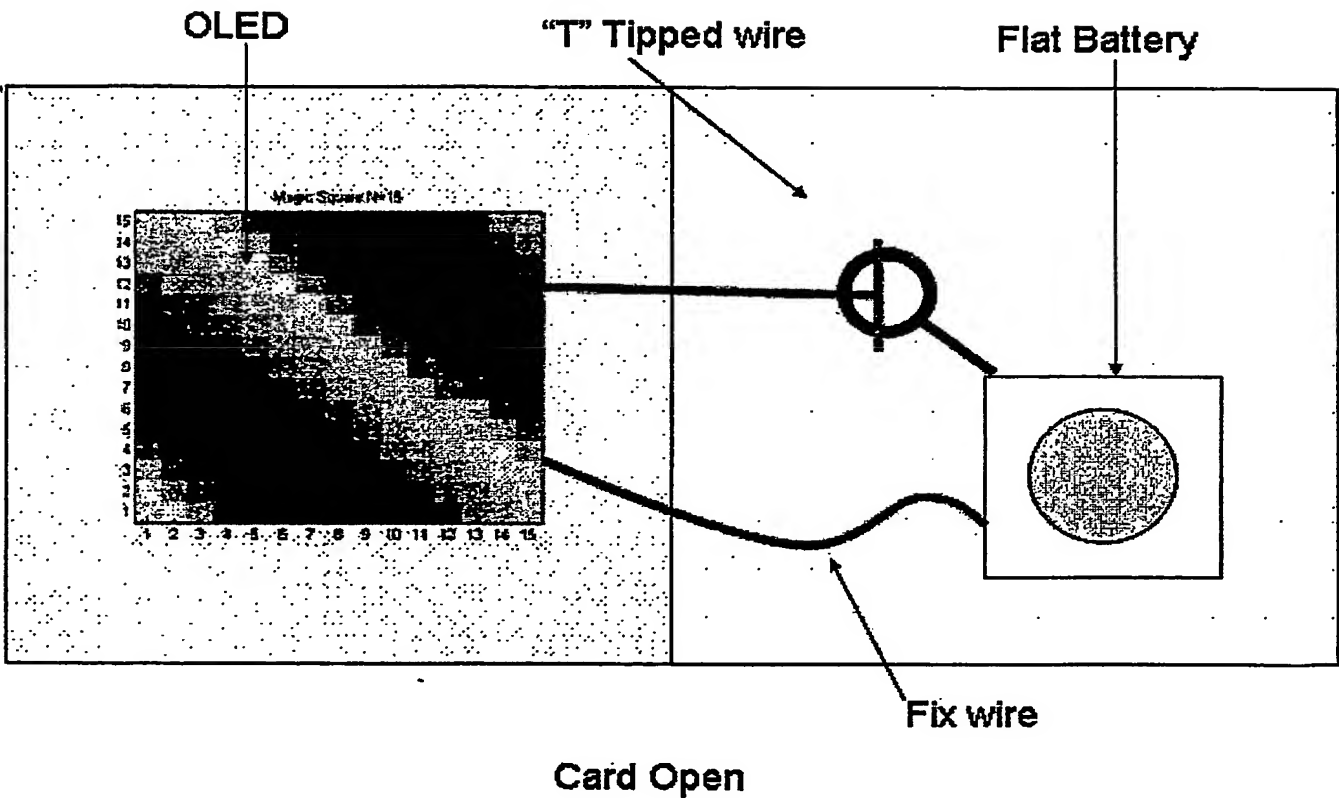
Figure 2 shows the card closed. The dotted lines mark the battery and the position of the T tipped wire vs. the loop. No contact exist.

## Claim

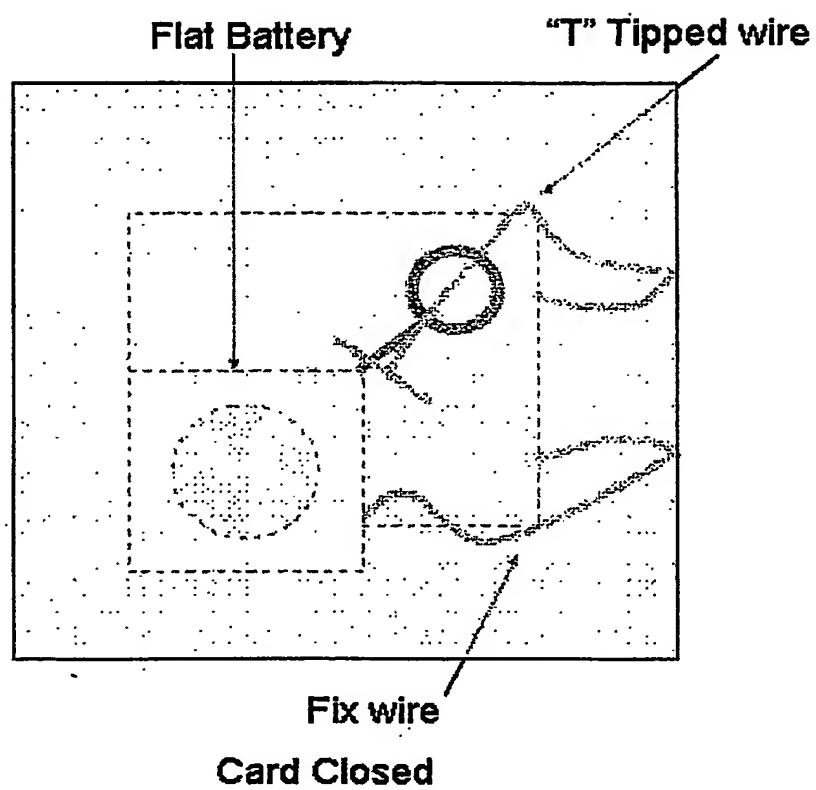
An illuminated decorative greeting card substantially as described herein with reference to the drawings.

For the Applicants  
REINHOLD COHN AND PARTNERS  
By:









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